



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,476	09/12/2003	Hee-Kwan Son	2557-000181/US	6312

30593 7590 03/21/2007
HARNES, DICKEY & PIERCE, P.L.C.
P.O. BOX 8910
RESTON, VA 20195

EXAMINER

YAARY, MICHAEL D

ART UNIT	PAPER NUMBER
----------	--------------

2193

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/660,476	Applicant(s) SON, HEE-KWAN	
	Examiner Michael Yaary	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/05/2006</u> | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. Claims 1-17 are pending in the application.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 16 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 56 of copending Application No. 10/736,832 (hereafter '832 application). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims contain the same limitations with only varying wording.

Art Unit: 2193

(i) As to claim 16 of the instant application, the claim contains all the limitations found in claim 56 of the '832 application. Claim 16 further specifies at "at least four inputs (line 4)." Claim 56 of the '832 application contains this limitation in a broader language by claiming, "a plurality of inputs (line 4). Thus, the instant application is claiming an obvious form of the '832 application, since "at least four inputs" would in fact cover "a plurality of inputs." Secondly, claim 16 of the instant application further discloses an obvious variation and similar wording change found in claim 56 of the '832 application. In the third limitation, found in claim 16 (lines 7-8), the instant application discloses generating a result in normal representation "in response to a carry propagation adder signal." Claim 56 of the '832 application does not disclose "in response to a carry propagation adder signal." However, this is in fact inherent in claim 56 of the '832 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Art Unit: 2193

5. Claims 1-17 are rejected under U.S.C. 101 as they are directed to non-statutory subject matter.

(i) As to claims 1, 7, 16, and 17 the claims are non-statutory as it fails to produce a "useful, concrete, and tangible result." *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F. 3d 1368, 1373-74 (Fed. Cir. 1998). The claims are directed to nothing more than mathematical calculations provided in an arrangement of circuitry. The claims fail to provide a useful, concrete, and tangible result using the calculations being performed and the obtained output, and thus fail to indicate how the invention accomplishes a practical application.

(ii) Claims 2-6 and 8-15 are rejected for similar reasons as discussed for their respective parent claims, as they fail to present any limitations that resolve the deficiencies of the claims from which they depend.

(ii) Suggested ways to overcome the rejection would be to incorporate into the claims, as taught in the specification, the practical use of Montgomery modular multiplication, such as in public-key cryptographic systems. In addition, to avoid claiming mathematical calculations and algorithms solely, as they fall under the judicial exception of an abstract idea, which is ineligible for protection.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2193

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al. (hereafter Takahashi)(US Pat. 6,973,470).

As to claim 16, Takahashi discloses receiving a multiplicand, a modulus, and a multiplier (column 2, lines 48-55; column 5, lines 45-49; and column 6, lines 28-32);

Performing carry save addition on at least four inputs related to the multiplicand, modulus, and multiplier to generate a result in redundant representation (carry save addition performed in figure 4 and column 7, line 19-column 8, line 3); and

Performing carry propagation addition to generate a result in normal representation in response to a carry propagation adder signal (Column 10, lines 30-55 disclose an adder structure (post processor) used to obtain a final result by adding the carry and sum bits from the carry save processing stage.).

Allowable Subject Matter

8. Claims 1-15 and 17 are allowable over prior art of record and would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 101, as set forth in this Office action.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) US Pat. 6,151,393 discloses performing modular multiplication similar to Montgomery's.

(ii) US Pub. 2004/0054705 discloses speeding up time required to perform modular arithmetic operations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Yaary whose telephone number is (571) 270-1249. The examiner can normally be reached on Monday-Friday, 8:00 a.m - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2193

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MY

my


MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNICAL CENTER 2100